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Deposited in DRO:

30 April 2011

Version of attached file:

Accepted Version

Peer-review status of attached file:

Peer-reviewed

Citation for published item:

Bambra, C. and Joyce, K. and Bellis, M. and Greatley, A. and Greengross, S. and Hughes, S. and Lincoln, P. and Lobstein, T. and Naylor, C. and Salay, R. and Wiseman, M. and Maryon-Davies, A. (2010) 'Reducing health inequalities in priority public health conditions : using rapid review to develop proposals for evidence-based policy.', *Journal of public health.*, 32 (4). pp. 496-505.

Further information on publisher's website:

<http://dx.doi.org/10.1093/pubmed/fdq028>

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Reducing health inequalities in priority public health conditions: Developing an evidence-based strategy?

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Competing Interest: None to declare.

Article word count = 3214 words

ABSTRACT

Background: In November 2008, Professor Sir Michael Marmot was asked by the Secretary of State for Health to chair an independent review to propose the most effective strategies for reducing health inequalities in England from 2010. In this paper, we present the findings and the policy proposals of the task group focusing on inequalities in priority public health conditions

Methods: A series of rapid literature reviews of the policy relevant international evidence base was undertaken. Quantitative studies of any design which looked at the effects on health inequalities, the social gradient or overall population health effects, of interventions designed to address the social determinants of public health priority conditions were examined.

Results: Five key proposals for policy and practice were made: Reduce smoking in the most deprived groups; Improve availability of and access to healthier food choices amongst low income groups; Improve the early detection and treatment of diseases; Introduce a minimum price per unit for alcohol; Improve the links between physical and mental health care. There were nine secondary proposals and a research proposal.

Conclusion: There is a dearth of robust evidence on the effectiveness of specific interventions in tackling inequalities in the public health priority conditions we examined. Our proposals are therefore based on extrapolation from general population health effects. Extensive, specific and robust evidence is urgently needed to guide policy and programmes. In the meantime, we believe our proposals provide a reasonably sound and pragmatic basis for an evidence-based approach.

243 words

BACKGROUND

The Commission on the Social Determinants of Health (CSDH) was set up by the World Health Organization (WHO) in 2005 and reported in 2008. [1] It documented the social determinants of health, how these vary globally, and it examined the evidence on what can be done to promote health equity both between social groups within countries (e.g. reduce health inequalities by socio-economic status) and between countries (e.g. reducing global health inequalities in life expectancy). It was also intended to “*foster a global movement*” to achieve social justice in health (2008: iii). [1] The 2008 report made three major (and broad) proposals on how to enhance health equity: 1. Improve daily living conditions; 2. Tackle the inequitable distribution of power, money and resources; 3. Measure and understand the problem and assess the impact of action.[1] The report received a lot of attention worldwide and in some countries significant political support was received for the broad recommendations from government or opposition political parties. [2] For example, in India, Norway and Denmark, country-specific commissions have been or are being set up to find evidence-based ways of putting the WHO recommendations into action and implementing effective policies to reduce health inequalities in these specific locations.

In England, Professor Sir Michael Marmot was asked by the Secretary of State for Health to chair an independent review to advise on the most effective strategies for reducing health inequalities in England from 2010. In this Review, he was asked to take into account the best global evidence appropriate to England from the WHO Commission on the Social Determinants of Health and other work over the past ten years. The Review Team was asked to liaise with the Department of Health and national and local stakeholders and work to timeframes of what can be achieved in the short to medium and longer term. The [Strategic Review of Health Inequalities in England Post 2010 \(Marmot Review\)](#) will report to the Department of Health by the end of 2009 and the final report will be published early in 2010. The overall aim of the review is to “*To advise the Secretary of State for Health on the future development of a health inequalities strategy by taking into account the best global evidence appropriate to England from the WHO Commission on the Social Determinants of Health, and the work of the last 10 years.*” [3] The first phase of the Review’s work (January to June 2009) was to examine the evidence base about the causes of health inequalities and about the success of interventions and policies to tackle them which have been implemented in England and

internationally. To do this, The Review team commissioned nine task groups to examine the intervention evidence on the various social determinants of health inequalities (see Box 1). In this paper we present an overview of the findings of the task group which focused on inequalities in a limited number of priority 'public health conditions': the big causes of premature death (cardiovascular disease and cancer); obesity; and other big public health burdens such as risk-taking behaviors in younger adults (alcohol, drugs, violence), mental ill-health throughout life, and the threats to wellbeing in older people. In order to determine the priority public health conditions to be considered, the commissioning paper from the Marmot Secretariat proposed some broad areas and examples to the Task Group. The initial meeting(s) of the Task Group discussed and refined the areas for review and then commissioned research into those areas that confirmed/amended the example conditions. The task group reviewed new and emerging evidence on the effects of particular policies, strategies, structures and interventions on reducing inequalities in these conditions, with a particular focus on the social determinants. On the basis of the evidence we collated and interpreted, we drafted five key proposals (with nine secondary proposals) on what we consider to be plausible policy directions and changes in practice. We also drafted a research proposal. The summary of evidence included in this paper is by nature brief and the full review is accessible online.[4]

Inequalities in the priority public health conditions

Health inequalities are defined as systematic differences between and within populations by socioeconomic status, ethnicity, gender and age. In this paper we will concentrate on socio-economic differences in health although as Graham and Kelly (2004) observe these axes of differentiation often interlock and disadvantage tends to accumulate over the life course [5]. Further, socio-economic status is known to be reflective of a range of other disadvantages including low education, lack of power and resources and marginalisation/social exclusion [1]. –Health inequalities are particularly pronounced for priority public health conditions, such as certain cancers; cardiovascular disease; obesity and public health burdens such as mental ill-health; health and wellbeing in older people and risky health behaviours (injuries, violence, alcohol and substance misuse).

Cardiovascular Disease and Cancer

Mortality and morbidity from CVD and cancer are unevenly distributed across society with a disproportionate burden in low-income groups: recent data indicate that there are 2.7 times more CVD

deaths among men in the most deprived twentieth compared with the least deprived twentieth of the population.[7] Similarly, socioeconomic status was shown to be related to lung cancer incidence, with people with low levels of education having a higher incidence of cancer.[8] Modifiable risk factors for CVD and cancers, such as smoking, physical inactivity, excess alcohol consumption or obesity, are also elevated in these population groups.[7] Indeed, there are commonalities in terms of the patterning of risk factors across other chronic conditions with smoking, consumption of unhealthy foods and physical inactivity also being associated with both diabetes and obesity. In high-income countries, while the overall prevalence of some risk factors have been decreasing (such as smoking), inequalities have been widening. [9]

Obesity

Obesity is a cause of several chronic diseases including diabetes, coronary heart disease, stroke, hypertension, osteoarthritis and certain forms of cancer. [10] Obesity is associated with social and economic deprivation across all age ranges and recent research suggests that this gradient is embedded with little evidence of change over time. [11]

Risky health behaviours (Alcohol, Drugs, Injuries and Violence)

In England, as with other high income countries, hospital admission for alcohol-specific conditions is associated with increased levels of deprivation, with rates of admission for the most deprived quintiles being particularly high. [15] The links between drug use and social and economic inequalities are well recognised as there is a significant positive correlation between the prevalence of problematic drug users and area level deprivation. Similarly, admission rates for drug-specific conditions show a strong positive association with deprivation. [16] The burden of injuries and violence in the UK is not equally distributed across the population, and in general, there are higher rates of injuries and violence among individuals with a lower socioeconomic status [17, 18].

Mental Health

Consistent associations have been found between mental ill health and various markers of social and economic adversity [20] The social gradient is particularly pronounced for severe mental illness, with the prevalence of psychotic disorders the prevalence amongst the lowest quintile of household

income being nine times higher than in the highest. [21] Similarly, the social gradient is also evident for common mental health problems, with a two-fold variation between the highest and lowest quintiles. [21] Poor mental health also increases the incidence of and worsens the prognosis for a wide range of physical health conditions, including heart disease, stroke, cancer, diabetes and asthma and is associated with a variety of risk factors such as smoking, drug use, alcohol abuse and obesity. Likewise, depression can be caused by physical health conditions (e.g. depression is an effect of chronic pain) [Bair, 2003]. It is therefore also important to consider the role of mental health and well-being when tackling inequalities across all priority public health conditions.

Health and Wellbeing of Older People

Approximately one in five older people in the UK live in poverty. [22] There are significant health inequalities amongst older people with those in the lowest quintile of income reporting poorer general health, lower levels of fruit and vegetable consumption and higher degrees of mobility problems. [23] Similarly, the prevalence of ischaemic heart disease amongst older people is higher in the most deprived areas. Diabetes prevalence and uncontrolled hypertension are also inversely related to income. [23]

Public policy and health inequalities

Policy approaches to addressing these health inequalities fall into three broad but interlinked categories: (1) improving the health of the most disadvantaged groups by concentrating on absolute levels of health; (2) reducing the gap between the best and worst off, by implementing interventions targeted towards those people with the greatest burden of disadvantage; (3) improving health across the whole social gradient. [5] Over the past 30 years, there have been a number of strategies proposed to tackle health inequalities in England; particularly in respect to priority health conditions (see Figure 1). However, they have all largely focused on either (1) improving the health of the most deprived groups, (2) narrowing the gap or (3) universal health improvements .

Additionally, policy has tended to focus on downstream interventions such as smoking cessation services rather than tackling upstream, distal causes such as poor living conditions. This approach is in contrast to a wide body of epidemiological and sociological work which suggests that health

inequalities are likely to persist between socioeconomic groups even if lifestyle factors (such as smoking) are equalised (Health Select Committee, 2009: paragraph 47). [24] Indeed, Phelan et al (2004) suggest that the only way to achieve lasting reductions in inequality is to address society's imbalances with regard to power, income, social support and knowledge. [25] In addition, there is evidence that educational and other individual based approaches tend to be taken up disproportionately by the more affluent and so also tend to widen inequalities even if average health improves [26]. However, the evidence base is not at all conclusive on what levels of approaches work to reduce inequalities and whether upstream, downstream, targeted or universal are most effective.

METHODS A series of rapid (non-systematic) narrative literature reviews of the policy relevant international evidence base was undertaken. Due to time and resource constraints the practice of conducting a traditional systematic review was precluded. Drawing on the principles of systematic reviews we, therefore, developed a methodology to identify, appraise and synthesise key policy ready evidence (i.e. review level) within a very short timeframe to feed directly into policymaking. This process involved the development of a new and pragmatic method with 5 different steps as outlined in figure 1.

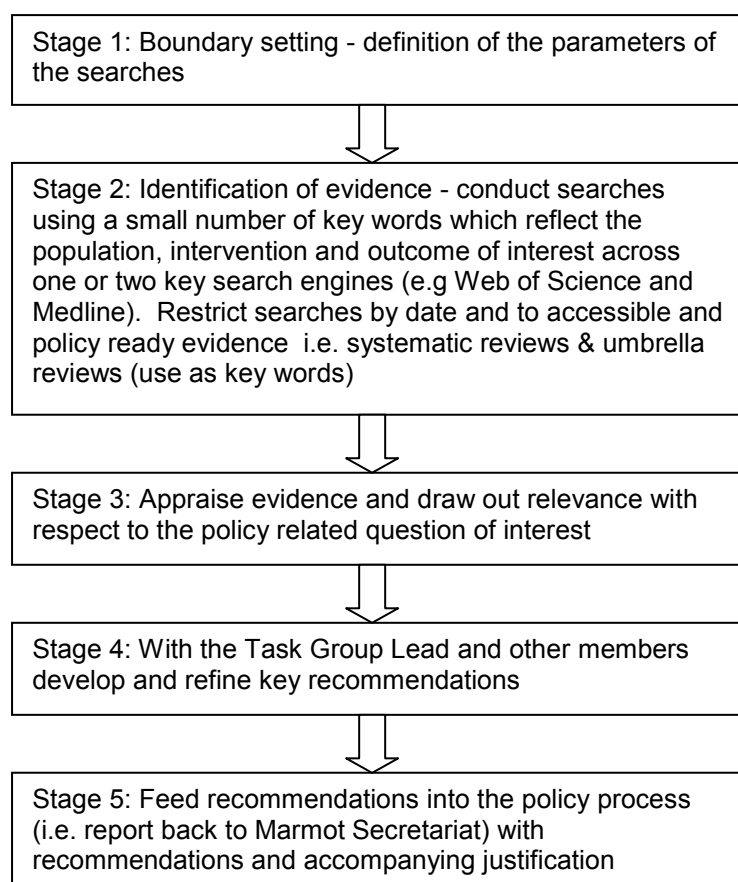
The first two stages comprised a rapid search of the literature. Drawing on the principles of systematic review methodology, it was important here to establish the boundaries of the search by identifying the population, types of intervention and outcomes of interest. Quantitative studies of any design which looked at the effects on health inequalities, the social gradient or overall population health effects, of interventions designed to address the social determinants of public health priority conditions were examined. We focused on “new evidence” – that is studies published since the 1998 Acheson Report. [27] Text Box 2 contains an example of this process for the mental health strand of the task group.

After conducting the searches the papers selected were appraised to draw out relevance in relation to the question of interest (i.e. what interventions work to reduce inequalities in the priority conditions). Any identified new or underexploited evidence was discussed with task group members and using an

iterative process of consensus building a list of proposed recommendations was formulated. The key recommendations from each strand were taken forward and amalgamated into a larger list which was then prioritised through further group discussions taking into account three competing but equally important considerations:

- (i) epidemiological evidence of what works to reduce inequalities in each priority condition;
- (ii) evidence of cost effectiveness for the proposed interventions;
- (iii) evidence on implementation and delivery of interventions.**

Figure 1: Phases involved in the formulation of recommendations



Box 2: Example of stages 1 & 2, (boundary setting and identification) from the mental health strand

Stage 1. Identification of key areas to focus on (childhood mental health; mental and physical health; employment and mental health) - this was done by consulting the research and policy teams within the Sainsbury Centre for Mental Health (SCMH) as well as expert contacts outside SCMH. The criteria used to select the areas were: (1) the existence of evidence implicating the area in the generation and maintenance of health inequalities; (2) the availability of interventions allowing this link with health inequalities to be weakened or broken; (3) the existence of a strong evidence base to support the use of these interventions.

Stage 2. Identification of evidence – key word searches were conducted using PubMed to identify relevant literature within each of the three areas. UK evidence was prioritised where available, but international evidence was also drawn upon. We also examined articles cited in the original CSDH report, and other recent, high-profile reports such as the Foresight report on Mental Capital and Wellbeing.

RESULTS: EVIDENCE BASED PROPOSALS

Our proposals to the Strategic Review of Health Inequalities in England post-2010 (the Marmot Review) for tackling inequalities in priority public health conditions are necessarily wide-ranging, reflecting the fact that the causes of health inequalities are complex. [24] We acknowledge that an effective strategy to improve health across the population, and to reduce health inequalities, is to implement upstream policy interventions that reach across sectors and create an environment (economic, social, cultural and physical) that fosters healthy living. However, these need to be supported by downstream socially-targeted interventions to mitigate any adverse distributional consequences. We have therefore proposed a mix of both upstream and downstream solutions. In many cases these build on initiatives that have already started (and need to be continued) or on pilots that would need to be scaled-up to have a significant impact on the social gradient. Below we present the five key proposals made to the Strategic Review of Health Inequalities in England post-2010 (the Marmot Review) and the supporting evidence upon which they are based. We also present the research proposal. The supporting evidence for the nine secondary proposals is presented in web appendix 1. Proposals in the latter category are those which overlap with the proposals of the other eight Marmot review task groups. The full list of proposals is presented in Figure 2.

Proposal 1: Reduce smoking in the most deprived groups by focusing on price and availability, while providing stop smoking services targeted to help the poorest groups quit.

Smoking accounts for around half the difference in life expectancy between the lowest and highest income groups, and smoking-related death rates are two to three times higher among disadvantaged social groups than among the better off. [7] [28] Tobacco control is therefore central to any strategy to tackle health inequalities and to any prevention strategy. Increasing the price of smoking is the most effective means of helping smokers quit. However, tobacco tax is strongly regressive and for those smokers who do not quit it can increase health inequalities, particularly for less affluent smokers. On the other hand, real price increases do help lead some smokers to quit and make very substantial health and welfare gains for those that do quit. This poses a dilemma, which can be resolved only by making the greatest possible efforts to motivate and assist smokers to quit in response to increases in taxation. This would include greater emphasis in smoking cessation initiatives on the psychosocial reasons for smoking. Preventing people from starting to smoke or helping them quit requires

measures at population level that impact on all the key levers: price, promotion, place and product, also known as the marketing mix. [29]

Proposal 2: Improve availability of and access to healthier food choices amongst low income groups

There is a clear gradient in the consumption of fruit and vegetables per day with quintile of household income, the lowest consumption being in the lowest income group. [4] Low income groups are less likely to consume five portions of fruit and vegetables daily, and more likely to consume fat spreads, non-diet soft drinks, meat and meat dishes, pizza, processed meats, whole milk and table sugar. [30] A survey by the National Consumer Council found that the formulation of various types of food tended to be less 'healthy' for the economy lines, cheaper foods for example having higher salt or fat content. [31]

Proposal 3: Improve the early detection and treatment of cancer, diabetes and cardiovascular disease, especially among the more susceptible groups.

Socioeconomic deprivation is a strong predictor of screening participation with expression of interest in colorectal screening and attendance at the test being lower in deprived groups. [32] Similar findings are reported for breast and cervical screening. [33] Evidence suggests that people from lower socio-economic groups have their cancer diagnosed at a later stage which subsequently affects treatment options and prognosis. [34] With regard to vascular checks, a recent systematic review has found strong socioeconomic and ethnic gradients in uptake of invitations for CVD screening. [35]

Proposal 4: Introduce a minimum price per unit for alcohol.

A systematic review of 112 studies examining the relationship between prices of alcohol and alcohol sales/self-reported drinking concluded there was a large body of evidence indicating an inverse relationship between alcohol prices and taxes, and drinking. [36] Furthermore in comparison to other prevention policies and programmes, policies which raised prices of alcohol were an effective method of reducing consumption. [36] Given the social patterning of alcohol consumption, banning cheap alcohol by introducing a mandatory minimum price per unit of alcohol may disproportionately benefit lower socio-economic groups. [37]

Proposal 5: Improve physical healthcare for people with mental health problems and mental healthcare for people with physical health problems.

Mental and physical wellbeing are closely interrelated, with higher rates of coronary heart disease, stroke, cancer, diabetes, infections, injuries and asthma amongst people with poor mental health. [38-40] People with a diagnosis of mental illness receive poor quality treatment for physical health problems and are rarely targeted for health promotion initiatives e.g. smoking cessation, healthy eating or exercise. [41] Conversely, people with other priority public health conditions such as diabetes and cancer are more likely to develop mental health problems. [42-44] The interface between primary and secondary care is particularly important in terms of improving healthcare for people with co-morbidities. [41] [45]

Research Proposal: Fund more studies which examine the impacts of interventions on socio-economic health inequalities.

Whilst there is often evidence of the general health effects of interventions, there is a dearth of evidence in respect of the impacts and cost-effectiveness of interventions on health inequalities. As a recent report shows, this is the case in terms of both primary studies and systematic reviews. [46] [47] Similarly, more research has been conducted on the effects on health inequalities of downstream interventions, as opposed to upstream interventions. The recent English Parliament Health Select Committee report on health inequalities (2009) also made it clear that the lack of evidence and evaluation of current policies makes it difficult to address health inequalities effectively. [24] While this is not an argument for doing nothing, it points to the need for a more systematic approach to building the evidence base in undertaking interventions, described in our earlier proposals, that are extrapolated from general population health effects.

DISCUSSION

Main findings of this study

There are four unifying themes within our total set of 15 proposals: (1) The importance of improving the physical, social and economic environment of deprived areas (e.g. improving access to healthy

foods, providing safe places for physical activity, improving the quality of housing, or increasing the level of employment). (2) The long-term public health benefits of intervening early in the life-course to prevent the development of risky health behaviours or chronic conditions (e.g. childhood socialisation schemes to reduce violence; improved infant and maternal health and nutrition). (3) The importance of considering the close interplay between physical and mental health when designing strategies to reduce health inequalities. (4) The use of fiscal and financial policy instruments to enable deprived populations to live healthier lives (e.g. cigarette pricing, minimum price for alcohol, financial incentives to reduce drug dependence, or a minimum income for healthy living).

What is already known on this topic

There is a dearth of policy ready evidence available on what types of approaches work to reduce inequalities. Further, there is far more evaluation evidence of downstream interventions than there is of upstream interventions. This is despite the well-acknowledged importance of upstream interventions in reducing health inequalities. [25] This may reflect the fact that, in the past, downstream (e.g. lifestyle) interventions have been easier to identify, implement and evaluate.

What this study adds

The study contributes to the knowledge base in two key ways: (i) the development of new methods for conducting rapid reviews to identify relevant and accessible evidence within a limited timeframe to feed into policy-making; (ii) the formulation of recommendations to tackle persistent inequalities in priority public health conditions using new or under exploited evidence. In terms of existing public health policy reports, this review aligns, reinforces and extends some of the findings of Black (1980) and Acheson (1998) (e.g. the need to reduce poverty and income inequalities in Black and Acheson respectively and the call for a minimum income for health living in older people proposed in this review, (Proposal 15)) but rather than being viewed as duplication, these findings should be framed as a call for further action to address embedded and socially unjust patterns of health inequality. In addition, the recommendations attempted to capture the inter-relationships between certain public health conditions. One example is the recommendation to strengthen the links between physical and mental ill health (Proposal 5).

Limitations of this study

While we have attempted to summarise all relevant new or underused research evidence on how to tackle inequalities in priority public health conditions, each of the searches were undertaken using rapid review techniques. This in itself represents a new development in relation to identifying accessible, policy relevant evidence within a short timeframe for use in developing recommendations for policymakers. However, despite drawing on the principles of systematic review methodology the review is for obvious reasons not exhaustive and we cannot claim to have identified, appraised and synthesized *all* relevant evidence in the topic area.

CONCLUSION

The process of formulating recommendations for policy making is inherently complex and involves reconciling a number of competing and often conflicting factors. For example, the use of fiscal policies such as the minimum price per unit for alcohol - which might be experienced as disempowering by disadvantaged groups - is at odds with the aim of reducing power, income and resource imbalances among populations. These underpinning tensions were compounded by the lack of evidence on effectiveness or cost-effectiveness of what types of societal level interventions work to reduce inequalities. Our research proposal, therefore, contains the suggestion that in the future, more evaluations of upstream interventions need to be conducted and funded.

Additionally, our research proposal suggests that all future evaluations of public health interventions should incorporate a health inequalities dimension. This is because in all of the priority health conditions covered by the task group there was a dearth of evidence on the effectiveness of interventions in tackling health inequalities between groups, as opposed to a general improvement in population health. [46, 47]. Our policy proposals are therefore based on extrapolation from this general population health evidence as it is all that is available. Implicitly, we have been guided by the assumption that as the burden of public health priority conditions disproportionately falls upon lower socioeconomic groups, interventions which have been shown to be generally effective in preventing or treating these conditions could, if targeted at deprived groups or areas, be effective in reducing health inequalities. We admit that this is not ideal. However, until an extensive and robust evidence

base is developed on the effects of interventions which reduce inequalities, we believe our proposals provide a reasonably sound and pragmatic basis for an evidence-based approach [1, 48].

ACKNOWLEDGEMENTS

We are grateful to the following people who submitted evidence to the task group: Deborah Arnott (Action on Smoking & Health); Andy Bell (Sainsbury Centre for Mental Health); Simon Capewell (University of Liverpool); Andy Cassels-Brown (Leeds Teaching Hospitals NHS Trust); Alan Dangour, Christopher Deeming, Jerry Morris and Paul Wilkinson (London School of Hygiene and Tropical Medicine); Gill Elliot (Liverpool John Moores University); Melvyn Hillsdon (University of Bristol); Sian Hiom (Cancer Research UK); Alyson Jones (Liverpool John Moores University); Jane Landon (National Heart Forum); Elaine Murphy (House of Lords); Michael Parsonage (Sainsbury Centre for Mental Health); Kiran Patel (South Asian Health Foundation); Mike Richards and Kathy Elliott (National Cancer Support Team); Alex Scott-Samuel (University of Liverpool); Linda Seymour (Sainsbury Centre for Mental Health); Claire Shaw (Liverpool John Moores University); Karen Tocque (Liverpool John Moores University); M. Justin S. Zaman (South Asian Health Foundation). We would also like to thank Peter Goldblatt and co-workers for their support and guidance throughout the process and for their helpful comments on this paper.

Source of funding

The work of the task group, on which this paper is based, was funded by the team at University College London that was undertaking the independent Strategic Review of Health Inequalities in England post-2010 (the Marmot Review) commissioned by the Department of Health. The proposals reported in this paper are those made by the task group to the Review Team. Neither the proposals made by the task group nor the commentary and opinions expressed in this paper represent the views, conclusions or recommendations of the Marmot Review or of the Department of Health.

Policy Implications

- Public policy needs to focus on improving the physical, social and economic environment of deprived areas (e.g. improving access to high nutrient foods, providing safe places for physical activity, improving the quality of housing, or increasing the level of employment).
- There are long-term public health benefits of intervening early in the life-course to prevent the development of risky health behaviours or chronic conditions (e.g. childhood socialisation schemes to reduce violence; improved infant and maternal health and nutrition).
- The close interplay between physical and mental health needs to be considered when designing strategies to reduce health inequalities.
- Fiscal and financial policy instruments should be used to enable deprived populations to live healthier lives (e.g. cigarette pricing, minimum price for alcohol, financial incentives to reduce drug dependence, or a minimum income for healthy living).

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Box 1: Marmot Review Task Groups

- 1) Early Child Development and Education
- 2) Employment Arrangements and Working Conditions
- 3) Social Protection
- 4) Built Environment
- 5) Sustainable Development
- 6) Economics
- 7) Delivery Systems and Mechanisms
- 8) Priority Public Health Conditions
- 9) Social Inclusion and Social Mobility

Figure 1: Key policy and related developments regarding inequalities in priority public health conditions in England

1980	<i>The Black Report</i>
1998	<i>Independent Inquiry into Inequalities in Health (The Acheson Inquiry)</i>
1999	<i>Saving Lives: Our Healthier Nation</i> <i>Action Report on Reducing Health Inequalities</i>
2000	<i>The NHS Plan</i>
2001	National Health Inequalities Targets <i>Health Committee Inquiry Report: Public Health</i>
2002	<i>Tackling Health Inequalities: 2002 cross-cutting review</i>
2003	<i>Tackling Health Inequalities: a programme for action</i>
2004	<i>Securing Good Health for the Whole Population (The Wanless Report)</i> <i>Choosing Health</i> <i>The NHS Improvement Plan</i> Treasury-led PSA targets Formation of Spearhead Primary Care Trusts and Local Authorities
2005	<i>Delivering Choosing Health</i> <i>Choosing a Better Diet</i> <i>Choosing Activity</i> <i>Tackling Health Inequalities: Status Report on the Programme for Action</i>
2006	<i>Our Health Our Care Our Say</i> <i>The NHS in England: The Operating Framework</i>
2007	<i>Our NHS Our Future</i> Local Area Agreements for target delivery
2008	<i>Health Inequalities: Progress and Next Steps</i>
2009	<i>Health Committee Report: Health Inequalities</i>

Figure 2: Full list of proposals made to the Strategic Review of Health Inequalities in England post-2010 (the Marmot Review)

Key Proposals

Proposal 1: Reduce smoking in the most hard to reach groups by focusing on price and availability, while providing stop smoking services to help the poorest groups quit.

Proposal 2: Improve availability of and access to healthier food choices amongst low income groups

Proposal 3: Improve the early detection and treatment of cancer, diabetes and cardiovascular disease, especially among the more vulnerable groups.

Proposal 4: Introduce a minimum price per unit for alcohol.

Proposal 5: Improve physical health care for people with mental health problems and mental health care for people with physical health problems.

Research Proposal

Proposal 6: Fund more studies which examine the impacts of interventions on socio-economic health inequalities.

Secondary Proposals

Proposal 7: Improve the social and physical environment to make it easier for lower socio-economic groups to engage in physical activity

Proposal 8: Improve infant and maternal nutritional status

Proposal 9: Enhance the psycho-social wellbeing of lower socio-economic groups.

Proposal 10: Increase use of contingency management within drug treatment programs.

Proposal 11: Ensure widespread implementation of 20mph maximum speed limits, especially in residential areas.

Proposal 12: Widespread introduction of early years interventions in particular pre-school enrichment programmes and school based social development programmes.

Proposal 13: Improve prevention and treatment of childhood mental health problems across the whole social gradient, with a particular focus on disadvantaged groups.

Proposal 14: Decrease the association between mental ill health and unemployment through the use of both targeted support and broader health promotion approaches.

Proposal 15: Implement a Minimum Income for Healthy Living (MIHL) in Older People